[redacted] Ex. 8, at 15. This requirement neither protects Comcast's network from harm nor prevent theft of service. Ex. 3, ¶ 69.

85. Comcast sets forth rules regarding the placement of a bar code label on a cable modem's packaging. Specifically, Comcast [redacted] Ex. 8, at 19. These requirements neither protect Comcast's network from harm nor prevent theft of service. Ex. 3, ¶ 69.

86. Comcast regulates how fluctuations in voltage affect the modem's performance. Specifically, [redacted] Ex. 8, at 24. UL safety testing already confirms that Zoom's cable modems meet relevant overvoltage protection requirements. These requirements neither protect Comcast's network from harm nor prevent theft of service. Ex. 3, ¶ 69.

87. Comcast tests how a cable modem's performance is affected by sudden changes in humidity. Specifically, [redacted] Ex. 8, at 20. The criteria listed for this test do not include testing for harm to the network, or for the potential theft of services. Ex. 3, ¶ 69.

88. Comcast sets absurd standards for testing the robustness of a cable modem's buttons and switches. Specifically, [redacted]

[redacted] Ex. 8, at 20. Zoom's cable modems include a reset button that is very unlikely to be pressed even 100 times in a product's lifespan. This requirement neither protects Comcast's network from harm nor prevents theft of service. Ex. 3, ¶ 69.

89. Zoom informed its supplier for another cable modem model that Comcast was now applying its P&E requirements to devices sold at retail. The supplier made independent inquiries to Comcast and concluded that the cost to Zoom of Comcast's P&E testing would be approximately $40,000. Ex. 3, ¶ 66.

90. Some of this expense would be incurred because Comcast requires a cable modem manufacturer to pay for Comcast personnel to travel via business class and stay at a five-star hotel while two weeks of site inspections at the manufacturing facility is carried out. In the case of Zoom's new DOCSIS 2.0 cable modem model, this would involve a trip to Asia. Ex. 3, ¶ 66.

91. Zoom also consulted with the supplier for Zoom's new DOCSIS 2.0 cable modem model regarding Comcast's P&E testing. The supplier's personnel informed Zoom that they believed the device would not pass the ingress requirements spelled out in a test suite referred to as SCTE 40, Ex. 9, that is part of Comcast's P&E tests. Comcast's requirements go beyond any requirements under the DOCSIS specifications in demanding that a cable modem successfully decode a weak signal in the presence of multiple severe impairments. Ingress requirements do not relate to harmful signals that the cable modem might inject into the network, nor do they relate to potential theft of a cable operator's service. Ex. 3, ¶ 63, 64.

92. The supplier's personnel also told Zoom that they doubted that any current DOCSIS 2.0 cable modem device would be able to meet the P&E requirements, including devices that Comcast was continuing to distribute to its subscribers. Ex. 3, ¶ 65.

93. The supplier's personnel indicated that meeting the ingress requirements as well as satisfying other elements of the P&E testing regime would require a redesign of the modem and cost considerable time and money. They also informed Zoom that any attempt at such a redesign might not succeed on the first attempt. Ex. 3, ¶ 65. In addition, the supplier estimated that Comcast's P&E requirements would increase by five to seven dollars the previous unit price quote for Zoom's volume purchase of a new DOCSIS 3.0 cable modem model with wireless connectivity. The higher price is caused by design changes that would need to be made to the cable modem to attempt to meet the P&E requirements. These changes are not necessary to prevent harm to the network or theft of service. Ex. 3, ¶ 73.

94. Because of the costs associated with Comcast's new P&E testing as well as the uncertainties associated with whether a redesigned DOCSIS 2.0 cable modem model could pass Comcast's tests and be approved for attachment to its network, Zoom decided that it could not bring its new DOCSIS 2.0 cable modem model to market if it was subject to Comcast's P&E requirements. Ex. 3, ¶ 66.

95. Moreover, Zoom executives have concluded that it likely will be unable to introduce another cable modem model at retail if Zoom is required to participate in P&E testing before a new cable modem model may be attached to Comcast's network. Ex. 3, ¶ 72.

96. In all of its experience with manufacturing cable modems, Zoom is not aware of an instance where one of its devices has caused harm to a cable operator's network, or where a Zoom device has facilitated the theft of service from a cable operator. Ex. 3, ¶ 30.

COUNT ONE

UNLAWFUL STANDARDS FOR ATTACHING DEVICES 47 C.F.R. § 76.1203

97. Complainant Zoom repeats and realleges each and every allegation contained in paragraphs 1 through 96 of this Complaint.

98. 47 C.F.R. § 76.1203 provides in full: "A multichannel video programming distributor may restrict the attachment or use of navigation devices with its system in those circumstances where electronic or physical harm would be caused by the attachment or operation of such devices or such devices that assist or are intended or designed to assist in the unauthorized receipt of service. Such restrictions may be accomplished by publishing and providing to subscribers standards and descriptions of devices that may not be used with or attached to its system. Such standards shall foreclose the attachment or use only of such devices as raise reasonable and legitimate concerns of electronic or physical harm or theft of service." (Emphasis added).

99. Navigation devices are defined in the Commission's rules to be "[d]evices such as converter boxes, interactive communications equipment, and other equipment used by consumers to access multichannel video programming and other services offered over multichannel video programming systems." 47 C.F.R. § 76.1200(c).

100. A cable modem is a navigation device pursuant to the Commission's definition because it is used by consumers to access other services (namely, broadband Internet access services) offered over a multichannel video programming system.

101. Comcast currently will not certify a new cable modem model for attachment to its system unless that cable modem has been deemed to comply with the standards set forth in its P&E testing regime.

102. Numerous standards contained in Comcast's P&E testing regime do not relate to whether a cable modem will cause electronic or physical harm to Comcast's network or facilitate theft of service.

103. Accordingly, by virtue of the acts described above, Comcast has violated 47 C.F.R. § 76.1203 by employing standards through its P&E testing regime that foreclose the attachment of cable modems to its system even when there are no reasonable and legitimate concerns that such modems would cause electronic or physical harm to its network or theft of service.

COUNT TWO

VIOLATION OF RIGHT TO ATTACH
47 C.F.R. § 76.1201

104. Complainant Zoom repeats and realleges each and every allegation contained in paragraphs 1 through 96 of this Complaint.

105. 47 C.F.R. § 76.1201 provides in full: "No multichannel video programming distributor shall prevent the connection or use of navigation devices to or with its multichannel video programming system, except in those circumstances where electronic or physical harm would be caused by the attachment or operation of such devices or such devices may be used to assist or are intended or designed to assist in the unauthorized receipt of service."

106. Navigation devices are defined in the Commission's rules to be "[d]evices such as converter boxes, interactive communications equipment, and other equipment used by consumers to access multichannel video programming and other services offered over multichannel video programming systems." 47 C.F.R. § 76.1200(c).

107. A cable modem is a navigation device pursuant to the Commission's definition because it is used by consumers to access other services (namely, broadband Internet access services) offered over a multichannel video programming system.

108. Comcast currently will not allow subscribers to attach newly designed cable modem models to its system unless those cable modem models have participated in Comcast's P&E testing regime and been deemed to comply with Comcast's P&E standards.

109. Numerous standards contained in Comcast's P&E testing regime do not relate to whether a cable modem will cause electronic or physical harm to Comcast's network or facilitate theft of service.

110. Accordingly, by virtue of the acts described above, Comcast is preventing the connection of cable modems to its system in circumstances other than those where electronic or physical harm would result or such devices could be used to assist in the unauthorized receipt of service, thereby infringing its subscribers' right to attach equipment in violation of 47 C.F.R. § 76.1201.

COUNT THREE

RESTRICTING AVAILABILITY OF DEVICES
47 C.F.R. § 76.1202

111. Complainant Zoom Telephonics repeats and realleges each and every allegation contained in paragraphs 1 through 96 of this Complaint.

112. 47 C.F.R. § 76.1202 provides in full: "No multichannel video programming distributor shall by contract, agreement, patent right, intellectual property right or otherwise prevent navigation devices that do not perform conditional access or security functions from being made available to subscribers from retailers, manufacturers, or other vendors that are unaffiliated with such owner or operator, subject to 76.1209."

113. Navigation devices are defined in the Commission's rules to be "[d]evices such as converter boxes, interactive communications equipment, and other equipment used by consumers

to access multichannel video programming and other services offered over multichannel video programming systems." 47 C.F.R. § 76.1200(c).

114. A cable modem is a navigation device pursuant to the Commission's definition because it is used by consumers to access other services (namely, broadband Internet access services) offered over a multichannel video programming system.

115. Comcast currently will not allow subscribers to attach newly designed cable modem models to its system unless those cable modem models have participated in Comcast's P&E testing regime and been deemed to comply with Comcast's P&E standards.

116. Given that Comcast is the largest provider of cable Internet services in the county, manufacturers are unlikely to introduce new cable modem models to national retailers unless those cable modems are approved for attachment to Comcast's network.

117. The expense, delays, difficulties, and uncertainties associated with Comcast's new P&E testing regime will prevent cable modem manufacturers from introducing certain new cable modem models into the retail market.

118. Accordingly, by virtue of the acts described above, Comcast has violated 47 C.F.R. § 76.1202 by employing impermissible testing standards for cable modems that have the effect of preventing cable modems from being made available to its subscribers by retailers and manufacturers unaffiliated with Comcast.

COUNT FOUR

UNLAWFUL STANDARDS FOR ATTACHING DEVICES 47 C.F.R. § 76.1203

119. Complainant Zoom repeats and reallege each and every allegation contained in paragraphs 1 through 96 of this Complaint.

120. 47 C.F.R. § 76.1203 provides in full: "A multichannel video programming distributor may restrict the attachment or use of navigation devices with its system in those circumstances where electronic or physical harm would be caused by the attachment or operation of such devices or such devices that assist or are intended or designed to assist in the unauthorized receipt of service. Such restrictions may be accomplished by publishing and providing to subscribers standards and descriptions of devices that may not be used with or attached to its system. Such standards shall foreclose the attachment or use only of such devices as raise reasonable and legitimate concerns of electronic or physical harm or theft of service." (Emphasis added).

121. Navigation devices are defined in the Commission's rules to be "[d]evices such as converter boxes, interactive communications equipment, and other equipment used by consumers to access multichannel video programming and other services offered over multichannel video programming systems." 47 C.F.R. § 76.1200(c).

122. A cable modem is a navigation device pursuant to the Commission's definition because it is used by consumers to access other services (namely, broadband Internet access services) offered over a multichannel video programming system.

123. Comcast will not allow a subscriber to attach cable modem model to its system unless that cable modem model has been tested by Comcast and deemed to meet Comcast's standards.

124. In October 2010, Comcast would not test Zoom's new DOCSIS 2.0 cable modem model with wireless connectivity, and its reasons for refusing to accept Zoom's new model for testing had nothing to do with concerns that the modem would cause harm to Comcast's network or facilitate theft of service.

125. Accordingly, by virtue of the acts described above, Comcast has violated 47 C.F.R. § 76.1203 by refusing to test Zoom's new DOCSIS 2.0 cable modem model with wireless connectivity so that it could be attached to Comcast's network.

COUNT FIVE

RESTRICTING AVAILABILITY OF DEVICES
47 C.F.R. § 76.1202

126. Complainant Zoom Telephonics repeats and realleges each and every allegation contained in paragraphs 1 through 96 of this Complaint.

127. 47 C.F.R. § 76.1202 provides in full: "No multichannel video programming distributor shall by contract, agreement, patent right, intellectual property right or otherwise prevent navigation devices that do not perform conditional access or security functions from being made available to subscribers from retailers, manufacturers, or other vendors that are unaffiliated with such owner or operator, subject to 76.1209."

128. Navigation devices are defined in the Commission's rules to be "[d]evices such as converter boxes, interactive communications equipment, and other equipment used by consumers to access multichannel video programming and other services offered over multichannel video programming systems." 47 C.F.R. § 76.1200(c).

129. A cable modem is a navigation device pursuant to the Commission's definition because it is used by consumers to access other services (namely, broadband Internet access services) offered over a multichannel video programming system.

130. Comcast will not allow a subscriber to attach cable modem model to its system unless that cable modem model has been tested by Comcast and deemed to meet Comcast's standards.

131. In October 2010, Comcast would not test Zoom's new DOCSIS 2.0 cable modem model with wireless connectivity. Because Comcast currently is the largest cable operator in the United States, it not economically viable for Zoom to introduce a new cable modem model into the retail market unless it is approved for use on Comcast's system.

132. Accordingly, by virtue of the acts described above, Comcast has violated 47 C.F.R. § 76.1202 by arbitrarily refusing to test a new Zoom DOCSIS 2.0 cable modem model with wireless connectivity and thus preventing that model from being made available to its subscribers by retailers and manufacturers unaffiliated with Comcast.

COUNT SIX

UNLAWFUL STANDARDS FOR ATTACHING DEVICES 47 C.F.R. § 76.1203

133. Complainant Zoom repeats and realleges each and every allegation contained in paragraphs 1 through 96 of this Complaint.

134. 47 C.F.R. § 76.1203 provides in full: "A multichannel video programming distributor may restrict the attachment or use of navigation devices with its system in those circumstances where electronic or physical harm would be caused by the attachment or operation of such devices or such devices that assist or are intended or designed to assist in the unauthorized receipt of service. Such restrictions may be accomplished by publishing and providing to subscribers standards and descriptions of devices that may not be used with or attached to its system. Such standards shall foreclose the attachment or use only of such devices as raise reasonable and legitimate concerns of electronic or physical harm or theft of service." (Emphasis added).

135. Navigation devices are defined in the Commission's rules to be "[d]evices such as converter boxes, interactive communications equipment, and other equipment used by consumers

to access multichannel video programming and other services offered over multichannel video programming systems." 47 C.F.R. § 76.1200(c).

136. A cable modem is a navigation device pursuant to the Commission's definition because it is used by consumers to access other services (namely, broadband Internet access services) offered over a multichannel video programming system.

137. Comcast does not publish or make publicly available the standards that it uses to determine whether a cable modem may be attached to its network.

138. Additionally, many of Comcast's P&E standards are vague and ambiguous. For example, Comcast does not provide cable modem manufacturers with an objective standard for how much a cable modem may weigh. Rather, [redacted] Ex. 8, at 11.

139. Accordingly, by virtue of the acts described above, Comcast has violated 47 C.F.R. § 76.1203 by failing to publish or make publicly available the standards that it uses in determining whether cable modems will be restricted from Comcast's network and by utilizing vague and ambiguous standards that do not provide sufficient notice to manufacturers or subscribers.

VI. PRAYER FOR RELIEF

Complainant respectfully requests that the Commission:

(a) find Comcast in violation of 47 C.F.R. § 76.1201, 47 C.F.R. § 76.1202, and 47 C.F.R. § 76.1203;

(b) enjoin Comcast from requiring cable modems being sold at retail to be evaluated in its Physical and Environmental testing regime before such modems may be attached to Comcast's network;

(c) enjoin Comcast from requiring cable modems sold at retail to participate in any Comcast testing unrelated to preventing harm to the network or theft of service;

(d) order Comcast to remedy the delay that it has caused Zoom Telephonics in bringing its two newest DOCSIS 2.0 cable modems to the retail market by testing those modems in an expedited fashion and at no charge;

(e) enjoin Comcast from asking CableLabs to add any additional testing requirements to its testing of Zoom's two newest DOCSIS 2.0 cable modems;

(f) order Comcast to agree to test any new DOCSIS 2.0 cable modem model or DOCSIS 3.0 cable modem model that Zoom submits in the next three years;

(g) order Comcast to publish its standards for testing all cable modems and (i) provide a detailed justification for how each test relates to whether a device will harm its network or facilitate theft of service and (ii) require Comcast to provide a detailed explanation of why the CableLabs testing process does not fully address any justification or concerns about cable modems harming Comcast's network or facilitating theft of service; and

(i) order any other relief that the Commission may deem appropriate.

November 29, 2010

Respectfully submitted,

ZOOM TELEPHONICS, INC.

By: _____

Kevin J. Martin
Matthew B. Berry*
Patton Boggs LLP
2550 M Street, N.W.
Washington, D.C. 20037
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Its Counsel
** Admitted only in Virginia*

CERTIFICATE OF SERVICE

I, Matthew B. Berry, hereby certify that on this 29th day of November 2010, I caused a true and correct copy of the foregoing Complaint to be served via first-class mail, postage prepaid, upon:

Ms. Sheila Smith
Comcast Cable Communications LLC
One Comcast Center
Philadelphia, PA 19103

Matthew B. Berry

EXHIBIT 1

United States Code: 47 U.S.C. § 549

47 U.S.C. § 549 Competitive availability of navigation devices

(a) Commercial consumer availability of equipment used to access services provided by multichannel video programming distributors — The Commission shall, in consultation with appropriate industry standard-setting organizations, adopt regulations to assure the commercial availability, to consumers of multichannel video programming and other services offered over multichannel video programming systems, of converter boxes, interactive communications equipment, and other equipment used by consumers to access multichannel video programming and other services offered over multichannel video programming systems, from manufacturers, retailers, and other vendors not affiliated with any multichannel video programming distributor. Such regulations shall not prohibit any multichannel video programming distributor from also offering converter boxes, interactive communications equipment, and other equipment used by consumers to access multichannel video programming and other services offered over multichannel video programming systems, to consumers, if the system operator's charges to consumers for such devices and equipment are separately stated and not subsidized by charges for any such service.

(b) Protection of system security — The Commission shall not prescribe regulations under subsection (a) of this section which would jeopardize security of multichannel video programming and other services offered over multichannel video programming systems, or impede the legal rights of a provider of such services to prevent theft of service.

(c) Waiver — The Commission shall waive a regulation adopted under subsection (a) of this section for a limited time upon an appropriate showing by a provider of multichannel video programming and other services offered over multichannel video programming systems, or an equipment provider, that such waiver is necessary to assist the development or introduction of a new or improved multichannel video programming or other service offered over multichannel video programming systems, technology, or products. Upon an appropriate showing, the Commission shall grant any such waiver request within 90 days of any application filed under this subsection, and such waiver shall be effective for all service providers and products in that category and for all providers of services and products.

(d) Avoidance of redundant regulations

(1) Commercial availability determinations — Determinations made or regulations prescribed by the Commission with respect to commercial availability to consumers of converter boxes, interactive communications equipment, and other equipment used by consumers to access multichannel
video programming and other services offered over multichannel video programming systems, before February 8, 1996, shall fulfill the requirements of this section.

(2) Regulations — Nothing in this section affects section 64.702(e) of the Commission's regulations (47 C.F.R. 64.702(e)) or other Commission regulations governing interconnection

and competitive provision of customer premises equipment used in connection with basic common carrier communications services.

(e) Sunset — The regulations adopted under this section shall cease to apply when the Commission determines that —

(1) the market for the multichannel video programming distributors is fully competitive;

(2) the market for converter boxes, and interactive communications equipment, used in conjunction with that service is fully competitive; and

(3) elimination of the regulations would promote competition and the public interest.

(f) Commission's authority. — Nothing in this section shall be construed as expanding or limiting any authority that the Commission may have under law in effect before February 8, 1996.

(June 19, 1934, ch. 652, title VI, Sec. 629, as added Pub.L. 104-104, title III, Sec. 304, Feb. 8, 1996, 110 Stat. 125.)

EXHIBIT 2

47 C.F.R. § 76.1201 Rights of subscribers to use or attach navigation devices.

No multichannel video programming distributor shall prevent the connection or use of navigation devices to or with its multichannel video programming system, except in those circumstances where electronic or physical harm would be caused by the attachment or operation of such devices or such devices may be used to assist or are intended or designed to assist in the unauthorized receipt of service.

47 C.F.R. § 76.1202 Availability of navigation devices.

No multichannel video programming distributor shall by contract, agreement, patent right, intellectual property right or otherwise prevent navigation devices that do not perform conditional access or security functions from being made available to subscribers from retailers, manufacturers, or other vendors that are unaffiliated with such owner or operator, subject to §76.1209.

47 C.F.R. § 76.1203 Incidence of harm.

A multichannel video programming distributor may restrict the attachment or use of navigation devices with its system in those circumstances where electronic or physical harm would be caused by the attachment or operation of such devices or such devices that assist or are intended or designed to assist in the unauthorized receipt of service. Such restrictions may be accomplished by publishing and providing to subscribers standards and descriptions of devices that may not be used with or attached to its system. Such standards shall foreclose the attachment or use only of such devices as raise reasonable and legitimate concerns of electronic or physical harm or theft of service. In any situation where theft of service or harm occurs or is likely to occur, service may be discontinued.

EXHIBIT 3

Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

In the Matter of	)	
ZOOM TELEPHONICS, INC. Complainant,	)	File No. _____
vs.	)	
COMCAST CABLE COMMUNICATIONS, LLC, A Subsidiary of **COMCAST CORPORATION,** Respondent.	)	

DECLARATION OF WILLIAM HUME VANCE

I, William Hume Vance, hereby declare under penalty of perjury that the following is true and correct to the best of my knowledge.

1. My full name is William Hume Vance; I am generally known as Hume Vance. I am currently the Director of Firmware Engineering for Zoom Telephonics, Inc ("Zoom" or "Zoom Telephonics").

2. I received a Master of Engineering Degree in Electrical Engineering from Cornell University in 1984, and for the last twenty-six years have worked in the electronics industry.

3. My primary focus has been in the field of telecommunications. From 1984 to 1985, I designed test fixtures and programs for telecommunications integrated circuits at LTX Corporation. From 1985 to 1990, I worked on signal processing at Raytheon Corporation. From 1990 to 1994, I was employed by Motorola, Inc., where I

focused primarily on Dataphone Digital System ("DDS") equipment. DDS was an early digital telecommunications technology. I wrote embedded software for this equipment, including as co-lead software designer of a multi-point DDS system. This system included a master device that coordinated communications among the master and multiple slave devices that shared a transmission medium on digital private telephone lines.

4. Since 1994, I have worked at Zoom Telephonics. Zoom was founded in 1977 and is based in Boston, Massachusetts. Zoom produces cable modems, ADSL modems, dial-up modems, wireless products, Voice over Internet Protocol products, and other communications products.

5. While at Zoom, I have worked on products including dialers, routers, Voice over IP ("VoIP") products, cable modems and Internet TV. I am an inventor or co-inventor on two U.S. patents relating to dialer and VoIP technology, and co-inventor on a patent application related to VoIP technology. All of these patents are assigned to Zoom Telephonics, Inc.

6. For the past ten years, my primary responsibilities at Zoom have been in the areas of engineering and product management. With respect to engineering, my focus has been on issues relating to embedded software and other software in communications products. With respect to product management, I have concentrated on cable modem and VoIP products as well as products that relate to Internet TV.

7. In 2001, I assumed full responsibility at Zoom for firmware development related to cable modems and continue to have that responsibility today. As a result, I

have been actively involved in the certification processes for Zoom's cable modems from 2001 to the present.

8. Zoom began producing cable modems in 2001. In total, Zoom has offered a total of six cable modem models for sale over the past decade. Currently, Zoom has two models in production: a Data Over Cable Service Interface Specification ("DOCSIS") 2.0 model; and a DOCSIS 3.0 model.

9. Zoom sells its cable modems primarily through high-volume retailers including Best Buy, Staples, Fry's, and Micro Center. Zoom is the second-largest provider of cable modems sold at retail in the United States, trailing only Motorola. Zoom also sells cable modems through a few small cable service providers in the United States and overseas. Cable modems comprise approximately one-third of Zoom's total sales.

10. Cable modems sold in the United States must meet the regulatory and certification requirements of several entities.

11. The Federal Communications Commission ("FCC") requires that cable modems and other home electronics equipment meet the requirements of Part 15, Subpart B of the Commission's rules ("FCC Part 15B"). These requirements restrict the electronic emissions of a cable modem or other electronic device radiated into the environment or conducted onto AC power lines. When an independent lab performs testing of a cable modem that meets the FCC's requirements, the process, including tests, generation of a test report, and receipt of a certificate of FCC conformity from the testing lab, generally takes about four weeks and costs between $6,000 and $8,000.

12. Underwriters Laboratories ("UL") tests cable modems against a set of safety standards. These standards are designed to protect against the risk of fire, and of injury from electric shock and other causes, such as dangerously hot surfaces. Products that meet these standards may be "listed." Safety listing is not universally required of electronic devices, such as cable modems, that are sold in the United States. However, safety testing under UL60950 or equivalent standards is required for cable models used in workplaces and certain jurisdictions within the United States. The testing may be administered by any nationally recognized testing laboratory ("NRTL"). UL is the oldest, largest, and most widely recognized of these laboratories. Safety testing of a cable modem typically costs between $6,500 and $9,500, and takes between six and eight weeks.

13. CableLabs, a research and development consortium of cable operators, tests cable modems for adherence to a set of standards called the Data Over Cable Service Interface Specification ("DOCSIS"). These standards have been developed to make it possible for equipment from all cable modem manufacturers to operate on the networks of all cable operators. The standards relate to the radio frequency interface ("RFI") to the cable network, to security mechanisms (Baseline Privacy Interface, or "BPI"), to data protocols, to management interfaces, and other items. The RFI standards include specifications designed, among other considerations, to ensure that a cable modem will not inject harmful signals into the network. The BPI standards are designed to ensure that cable modems that adhere to these standards will not facilitate theft of services from cable operators. The protocol standards also ensure that a cable modem will not transmit in a time slot reserved for another cable modem.

14. A cable modem manufacturer seeking certification from CableLabs first must demonstrate adherence to the DOCSIS standards by running a suite of tests that verify DOCSIS compliance. The tests may be run by the manufacturer or by some other entity. When the manufacturer submits a cable modem model to CableLabs for certification, the manufacturer must include, as part of the submission, documentation that shows successful completion of the DOCSIS test suites. Success in this part of the CableLabs certification is defined as passing every test, with not a single failure unless CableLabs agrees to a documented exception. From five to thirty samples of the cable modem are also included in the submission. CableLabs may run the sample cable modems through any or all of the tests specified in the DOCSIS test suite. CableLabs also evaluates the robustness of the cable modem in handling large data flows over extended periods and tests for interoperability with other DOCSIS equipment in their laboratories. The interoperability testing provides a method to verify in a realistic setting that the cable modem does not inject harmful signals into the network, and does not transmit at times reserved for other cable modems. CableLabs also verifies the validity of the manufacturer's security certificates and of its implementation of the DOCSIS BPI specification so that the device will not facilitate theft of service from cable service providers.

15. This "full submission" testing conducted by CableLabs generally occurs in a CableLabs "wave" that takes about 12 weeks and currently costs $75,000 (although a DOCSIS 2.0 cable modem may complete the testing process in as short as eight weeks, again for $75,000). If a product has previously been certified by CableLabs, then it is also possible to do an "OEM submission" of the same product on a different manufacturer's

brand for a CableLabs charge of $10,000. OEM stands for Original Equipment Manufacturer. In the case of cable modems, an OEM may certify a product with CableLabs under its own name and then pass on that certification to one or more other manufacturers that would re-brand the product. CableLabs requires that such a previously certified and re-branded product must be re-submitted as an "OEM of a Certified/Qualified Product," in order to pass on the certification. The review of such a submission generally takes four to six weeks.

16. All of the time and cost estimates mentioned above assume that the cable modem passes each test. Failure in any test requires undergoing and paying for another test cycle, thus adding to both the time and costs associated with the certification process.

17. In some cases, the FCC and UL test cycles may be run at the same time. Technically, the CableLabs testing could also be run in parallel with FCC and UL testing. As a general matter, however, this is typically impractical because failure in the FCC or UL testing could results in design changes to the device. Those design changes would then require that the device be resubmitted to CableLabs, which would cost a manufacturer an additional $75,000. For a previously CableLabs certified OEM product that also has prior FCC and UL approvals, the risk of failing FCC or UL testing is small enough that it makes sense a manufacturer to submit the device simultaneously to FCC, UL, and CableLabs.

18. In addition to the FCC, UL, and CableLabs testing processes explained above, cable operators have widely different policies when it comes to the question of additional testing.